

Please replace the paragraph beginning at page 14, line 6, with the following amended paragraph: **(Note that the underlining was in the original text. The only text added is the term “MTBN4” which replaces the deleted term “MPBN4”.)**

**Example 1. MPBN4 MTBN4 Elicits a Specific Skin Reaction in
Guinea Pigs Infected with *M. tuberculosis***

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application

Listing of Claims:

1. (Currently amended) An isolated DNA molecule comprising a DNA sequence encoding a polypeptide with a first amino acid sequence selected from the group consisting of the amino acid sequences of the polypeptides MTBN1, MTBN2, MTBN3, MTBN4, MTBN5, MTBN6, MTBN7, and MTBN8, [[as depicted in Fig. 1,]]

or a second amino acid sequence identical to said first amino acid sequence but with conservative substitutions,

wherein said polypeptide has *Mycobacterium tuberculosis* specific antigenic and immunogenic properties.

2. (Original) An isolated portion of the DNA molecule of claim 1, said portion encoding a segment of said polypeptide shorter than the full-length polypeptide, said segment having *Mycobacterium tuberculosis* specific antigenic and immunogenic properties.

3. (Currently amended) A vector comprising:
(a) the DNA molecule of claim 1; and

(b) ~~transcriptional and translational~~ a regulatory sequence[[s]] operationally linked to said DNA sequence, said regulatory sequence[[s]] allowing for expression of the polypeptide encoded by said DNA sequence in a cell.

4. (Currently amended) A vector comprising:

(a) the DNA molecule of claim 2; and

(b) ~~transcriptional and translational~~ a regulatory sequence[[s]] operationally linked to said DNA sequence, said regulatory sequence[[s]] allowing for expression of the polypeptide encoded by said DNA sequence in a cell.

5. (Original) A cell transformed with the vector of claim 3.

6. (Original) A cell transformed with the vector of claim 4.

7. (Original) A composition comprising the vector of claim 3 and a pharmaceutically acceptable diluent or filler.

8. (Original) A composition comprising the vector of claim 4 and a pharmaceutically acceptable diluent or filler.

9. (Currently amended) A composition comprising at least two DNA sequences, each encoding a polypeptide of the *Mycobacterium tuberculosis* complex that is not a polypeptide encoded by the genome of cells of the Bacille Calmette Guerin (BCG) strain of *Mycobacteria bovis*, said DNA sequences being operationally linked to ~~transcriptional and translational~~ a regulatory sequence[[s]] which allows for expression of each said polypeptide in a cell of a vertebrate,

wherein at least one of said at least two DNA sequences is a DNA molecule of claim 1.

10. (Currently amended) A composition comprising at least two DNA sequences, each encoding a functional fragment of a polypeptide of the *Mycobacterium tuberculosis*

complex, said DNA sequences being operationally linked to ~~transcriptional and translational~~ a regulatory sequence[[s]] which allows for expression of each said polypeptide in a cell of a vertebrate,

wherein at least one of said at least DNA sequences is a DNA molecule of claim 2.

11. (Currently amended) An isolated polypeptide with a first amino acid sequence selected from the group consisting of the sequences of the polypeptides MTBN1, MTBN2, MTBN3, MTBN4, MTBN5, MTBN6, MTBN7, and MTBN8, [[as depicted in Fig. 1,]]

or a second amino acid sequence identical to said first amino acid sequence but with conservative substitutions,

wherein said polypeptide has *Mycobacterium tuberculosis* specific antigenic and immunogenic properties.

12. (Original) An isolated segment of the polypeptide of claim 11, said segment being shorter than the full-length polypeptide and having *Mycobacterium tuberculosis* specific antigenic and immunogenic properties.

13. (Original) A composition comprising the polypeptide of claim 11 and a pharmaceutically acceptable diluent or filler.

14. (Original) A composition comprising a functional fragment of the polypeptide of claim 12 and a pharmaceutically acceptable diluent or filler.

15. (Currently amended) A composition comprising at least two polypeptides of the *Mycobacterium tuberculosis* complex, each polypeptide not being encoded by the genome of the cells of the BCG strain of *Mycobacterium bovis*, wherein at least one of said at least two polypeptides is a polypeptide of claim 1.

16. (Currently amended) A composition comprising functional fragments of at least two polypeptides of the *Mycobacterium tuberculosis* complex, each polypeptide not being

encoded by the genome of cells of the Bacille Calmette Guerin (BCG) strain of *Mycobacteria bovis*, wherein at least one of said at least polypeptides is a segment of claim 2.

17. (Currently amended) A method of diagnosis comprising:
 - (a) administration of the composition of claim 15 to a subject suspected of having or being susceptible to *Mycobacterium tuberculosis* infection; and
 - (b) detecting an immune response in said subject to said composition as an indication that said subject has ~~or is susceptible~~ been exposed to *Mycobacterium tuberculosis* infection.
18. (Currently amended) A method of diagnosis comprising:
 - (a) administration of the composition of claim 16 to a subject suspected of having or being susceptible to *Mycobacterium tuberculosis* infection; and
 - (b) detecting an immune response in said subject to said composition as an indication that said subject has ~~or is susceptible~~ exposed to *Mycobacterium tuberculosis* infection.
19. (Withdrawn) A method of diagnosis comprising:
 - (a) providing a population of cells comprising CD4 T lymphocytes from a subject;
 - (b) providing a population of cells comprising antigen presenting cells (APC) expressing a major histocompatibility complex (MHC) class II molecule expressed by said subject;
 - (c) contacting the CD4 lymphocytes of (a) with the APC of (b) in the presence of the polypeptide of claim 12; and
 - (d) determining the ability of said CD4 lymphocytes to respond to said polypeptide, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.
20. (Withdrawn) A method of diagnosis comprising:
 - (a) providing a population of cells comprising CD4 T lymphocytes from a subject;
 - (b) providing a population of cells comprising antigen presenting cells (APC) expressing at least one major histocompatibility complex (MHC) class II molecule expressed by said subject;

(c) contacting the CD4 lymphocytes of (a) with the APC of (b) in the presence of the segment of claim 12; and

(d) determining the ability of said CD4 lymphocytes to respond to said polypeptide, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

21. (Withdrawn) A method of diagnosis comprising:

- (a) providing a population of cells comprising CD4 T lymphocytes from a subject;
- (b) providing a population of cells comprising antigen presenting cells (APC)

expressing at least one major histocompatibility complex (MHC) class II molecule expressed by said subject;

(c) contacting the CD4 lymphocytes of (a) with the APC of (b) in the presence of the composition of claim 15; and

(d) determining the ability of said CD4 lymphocytes to respond to said polypeptide, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

22. (Withdrawn) A method of diagnosis comprising:

- (a) providing a population of cells comprising CD4 T lymphocytes from a subject;
- (b) providing a population of cells comprising antigen presenting cells (APC)

expressing at least one major histocompatibility complex (MHC) class II molecule expressed by said subject;

(c) contacting the CD4 lymphocytes of (a) with the APC of (b) in the presence of the composition of claim 16; and

(d) determining the ability of said CD4 lymphocytes to respond to said polypeptide, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

23. (Withdrawn) A method of diagnosis comprising:

- (a) contacting the polypeptide of claim 11 with a bodily fluid of a subject;
- (b) detecting the presence of binding of antibody to said polypeptide, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

24. (Withdrawn) A method of diagnosis comprising:
(a) contacting the segment of claim 12 with a bodily fluid of a subject;
(b) detecting the presence of binding of antibody to said polypeptide, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

25. (Withdrawn) A method of diagnosis comprising:
(a) contacting the composition of claim 15 with a bodily fluid of a subject;
(b) detecting the presence of binding of antibody to said composition, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

26. (Withdrawn) A method of diagnosis comprising:
(a) contacting the composition of claim 16 with a bodily fluid of a subject;
(b) detecting the presence of binding of antibody to said composition, as an indication that said subject has or is susceptible to *Mycobacterium tuberculosis* infection.

27. (Withdrawn) A method of vaccination comprising administration of the composition of claim 7 to a subject.

28. (Withdrawn) A method of vaccination comprising administration of the composition of claim 8 to a subject.

29. (Withdrawn) A method of vaccination comprising administration of the composition of claim 9 to a subject.

30. (Withdrawn) A method of vaccination comprising administration of the composition of claim 10 to a subject.

31. (Withdrawn) A method of vaccination comprising administration of the composition of claim 13 to a subject.

32. (Withdrawn) A method of vaccination comprising administration of the composition of claim 14 to a subject.

33. (Withdrawn) A method of vaccination comprising administration of the composition of claim 15 to a subject.

34. (Withdrawn) A method of vaccination comprising administration of the composition of claim 16 to a subject.

35. (New) The DNA molecule of claim 1, wherein the DNA sequence is selected from the group of DNA sequences consisting of the *mtbn1*, *mtbn2*, *mtbn3*, *mtbn4*, *mtbn5*, *mtbn6*, *mtbn7*, and *mtbn8*.

36. (New) The DNA molecule of claim 35, wherein the DNA sequence is the DNA sequence *mtbn4*.

37. (New) The DNA molecule of claim 1, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

38. (New) The isolated portion of DNA of claim 2, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

39. (New) The vector of claim 3, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

40. (New) The vector of claim 4, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

41. (New) The cell of claim 5, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

42. (New) The cell of claim 6, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

43. (New) The composition of claim 7, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

44. (New) The composition of claim 8, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

45. (New) The composition of claim 9, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

46. (New) The composition of claim 10, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

47. (New) The polypeptide of claim 11, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

48. (New) The isolated segment of claim 12, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

49. (New) The composition of claim 13, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

50. (New) The composition of claim 14, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

51. (New) The composition of claim 15, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

52. (New) The composition of claim 16, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

53. (New) The composition of claim 17, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.

54. (New) The composition of claim 18, wherein the first amino acid sequence is the amino acid sequence of the polypeptide MTBN4.